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Diapycnal Mixing in a Coastal Regime

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LONG-TERM GOALS

To identify the major processes producing mixing in the upper ocean and to understand their dynamics sufficiently well to permit accurate parameterization of mixing for use in numerical models.

OBJECTIVES

This was the first attempt we know of to survey a coastal domain with sufficient coverage to assess how mixing levels vary across the domain. Previous measurements have been concentrated in sub-regions, often revealing particular mixing processes, but insufficient to guide modelers in how to represent mixing over the whole domain.

APPROACH

To obtain spatial coverage, we ran lines of microstructure profiles that were 5-10 km long (Fig. 1). To observe the primary temporal variability, each line was run repeatedly for 12.5 hours, the period of the 'twice-daily' tide, and some lines were rerun at a different phase of the monthly tidal period. Our planned lines were modified as we went and began to understand the patterns of tidal currents and mixing in the bay. The mixing measurements were supplemented by the powerful Doppler Sonars installed on R/V Revelle by Rob Pinkel at Scripps and by a 300 kHz ADCP on the bottom the bay.

WORK COMPLETED

Measurements were taken during August 2006, and we are not starting to analyze the data.

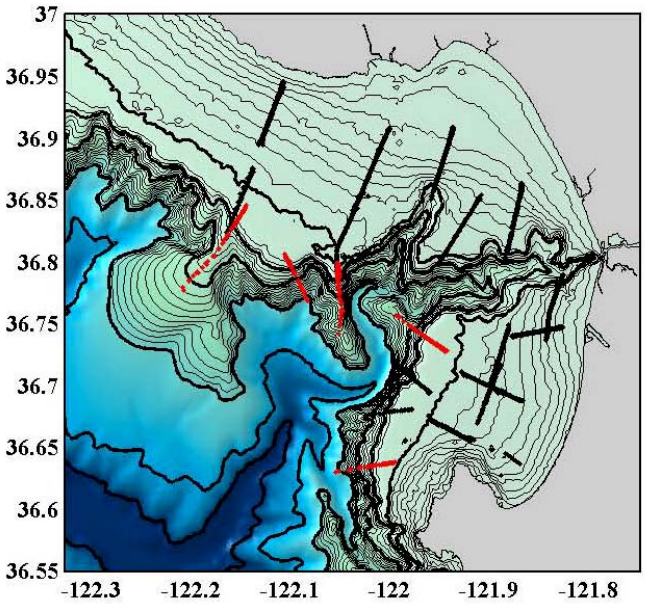

Figure 1: positions of microstructure profiles in Monterey Bay.
[graph: What appear to be lines are dense sets of dots, one per profile, black for those taken with an MMP and red for those made with AMP8. Each line was run for at least 12.5 hours, the period of the 'twice-daily' tide. On the continental shelf thin isobaths are at 10 m intervals. Dark isobaths are 100, 250, 500, 1000, and 1500 m.

RESULTS

Until we have had time to analyze the data, it is premature to discuss even preliminary results.

IMPACT/APPLICATIONS

Too early to tell.